DOCUMENT RESUME

ED 467 917 IR 021 437

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TITLE	Some Lessons for Higher Education from the Economics of Electronic Commerce.
PUB DATE	2001-12-00
NOTE	7p.; In: Meeting at the Crossroads. Proceedings of the Annual Conference of the Australasian Society for Computers in Learning in Tertiary Education (ASCILITE 2001) (18th, Melbourne, Australia, December 9-12, 2001); see IR 021 433.
PUB TYPE	Reports - Evaluative (142) -- Speeches/Meeting Papers (150)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS
DESCRIPTORS	Computer Uses in Education; *Economic Factors; *Economics; Educational Innovation; Educational Technology; Higher Education; *Information Technology; Internet; *Virtual Universities
IDENTIFIERS	*Electronic Commerce

ABSTRACT

The arrival of the Internet has been seen to portend the rise of the virtual university, global competition, and the end of campus education. The emerging economics of electronic commerce (eCommerce) allows for a measured understanding of the implications of the new technologies for higher education and even how educational innovation should be focused. This paper considers what constitutes eCommerce and why it matters. The forces at work in its uptake across the economy are examined, and the key concepts of transaction and organizational costs are defined and discussed, as are some possible economic and labor market effects of eCommerce. The lessons of all of this for higher education are discussed, and some concluding observations are offered. Four lessons emerge: (1) campus education is probably a normal good in that demand for it increases with income; (2) eCommerce alone does not provide grounds for significant changes to university offerings; (3) new partnerships and delivery mechanisms will emerge but not dominate; and (4) there will be pressure from a variety of sources to enhance campus education in light of the new information technologies and practices. (Author/MES)

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ED 467 917

SOME LESSONS FOR HIGHER EDUCATION FROM THE ECONOMICS OF ELECTRONIC COMMERCE

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Abstract

The arrival of the Internet has been seen to portend the rise of the virtual university, global competition and the end of campus education. The emerging economics of electronic commerce allows for a measured understanding of the implications of the new technologies for higher education and even how educational innovation should be focused. Four lessons emerge. First, campus education is probably a normal good in that demand for it increases with income. Second, electronic commerce alone does not provide grounds for significant changes to university offerings. Third, new partnerships and delivery mechanisms will emerge but not dominate. And fourth, there will be pressure from a variety of sources to enhance campus education in light of the new information technologies and practices.

Keywords

economics, higher education, information technology, electronic commerce, virtual university, online instruction

Introduction

The rise of the Internet, its attendant information technologies and their application to business has engendered a great deal of hype. Commentators have, among other things, heralded the arrival of a new economy and foretold the total transformation of higher education, including: the rise of the virtual university, global competition in education and the end of campus education. The purpose of this paper is to see what can be made of the future of higher education in light of the emerging economics of electronic commerce (eCommerce). Like eCommerce itself, the economics of eCommerce is an emerging field and many of features of both are yet to stabilise. However, from the perspective of economics, some of the salient features of eCommerce seem quite clear, even at this early stage, and much of this is relevant to a measured understanding of the implications of the new information technologies for higher education.

In section 2 below consideration is given to just what constitutes eCommerce and why it matters. The forces at work in its uptake across the economy are examined. The key concepts of transaction and organisational costs are defined and discussed, as are some possible economic and labour market effects of eCommerce. Scrutiny is then turned to the lessons of all this for higher education in section 3. Some concluding observations are offered in section 4. Finally note that this is a paper for non-specialists and terms are defined as they are introduced.

Some Economics of eCommerce

There is no single, well-established, and widely accepted definition of eCommerce. However, this is not a serious impediment. For present purposes it is sufficient to follow the OECD view of eCommerce as: "business occurring over networks which use non-proprietary protocols that are established by an open standard setting process such as the Internet" (OECD, 1998).

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Moreover, the term "business" is to be understood broadly to include both networked activity between, and within, economic units like firms, households, government agencies and institutions of all sorts (including, of course, institutions of higher education). This definition also nicely reflects the fact that eCommerce is a new way of doing business not just a new business sector.

Much of the discussion of eCommerce has focused on new information products and networks per se and has under-emphasised the significance of the Internet and its attendant technologies for the most fundamental costs of doing business, the costs of transacting and the costs of organisation. (These terms are discussed in more detail below.) The potential of eCommerce to reduce these costs is of the first importance because they don't just affect Internet service and content providers or even just those firms with computers. Transaction and organisational costs affect every business, every household, every government agency and every educational institution. This is why eCommerce is best seen as a whole new way of doing business, rather than just a matter of firms developing an Internet version of their product catalogues or something for consumers with a liking for gadgets.

Lest this point be overstated, note that eCommerce does not imply a new economy in the sense of a radically changed set of outputs or fundamentally different social institutional forms. (Parham (1999) contends that there may be a new economy in the sense of a new productivity growth path, but that is another matter entirely.) While some new markets, products and firms are emerging; it is the processes of business that are changing significantly not its content. Indeed, it is simply not a matter of choice for firms in the advanced economies: they must pursue whatever transaction and organisational cost savings are offered by eCommerce. And, moreover, while these opportunities are being explored there is likely to be a great deal of trial and nearly as much error, as recent rash of dot-com failures illustrates only too well.

A transaction cost is anything that interferes with or limits the ability of agents (firms, households or institutions) to pursue and make mutually beneficial exchanges in markets. These difficulties are often, at base, problems associated with acquiring the relevant information. Among a host of other things, these information problems can lead to costs in: locating an exchange partner, specifying precisely what is to be exchanged, agreeing a price, and ensuring that which was to be exchanged, was actually exchanged.

Organisational costs, on the other hand, are anything that inhibits an agent's ability to consciously coordinate their activity to achieve some understood objective within a single economic entity; that is a particular firm, household or institution. Again these difficulties are primarily informational in nature. In a firm this class of costs relate to the coordination of production, logistics, the operation of management information systems and internal communications in general. The organisational costs of a firm do not include marketing and input procurement costs as these arise from the use of the market and are better regarded as transaction costs in the sense employed here.

There seems to be, as yet, no systemic wide-ranging empirical study of the comparative transaction costs of conducting business via the various means now available: face-to-face, mail order catalogue, telephone, and now via the Internet. However, there have been a number of industry studies conducted. Thus, for example, it has been estimated for the US computer software industry that seller transaction costs are $15 for face-to-face transactions, $5 for telephone transactions, and between 20 and 50 cents for Internet transactions (Bollier, 1996). A set of Australian estimates puts seller transaction costs for a sales representative visit at $300, a customer initiated face-to-face transaction at $25 to $30, a telephone transaction at $4 to $8, and an Internet transaction at less than 25 cents (Callaghan, 1999). As an illustration of organisational cost savings, consider the case of Ford Motor Company's move to use an Internet system for processing the more than one million travel and expense account reports employees submit each year. Large corporations like Ford spend about $36 on processing each paper-based expense report. With the Internet and electronic downloading of credit-card receipts, it is estimated that the cost can drop to about $4 per expense report on average (Warner, 1999).

If the relative organisational and transaction costs are of the order indicated above, it is little wonder that eCommerce has captured so much attention and expanded so rapidly. Indeed, given the competitive pressure faced by firms, it is to be expected that the uptake of eCommerce will be fastest in firms and for transactions between firms. (A raft of estimates of business-to-business eCommerce puts it at between 61% and 90% of all eCommerce activity (OECD, 1998)). In competitive industries it is matter of survival, not taste, for firms to minimise costs, including organisational and transaction costs. Interacting firms will drag their business partners into eCommerce as both can gain from doing so. Similarly, firms in less competitive industries will be pressured to adopt best practice eCommerce to minimise transaction costs in the presence of the discipline of increasingly net-savvy capital markets. In short, for the firm there seems little escape from the clutches of eCommerce. The pressures of competition will see its adoption wherever there are cost savings to be made.

The competitive pressure on firms to adopt eCommerce does not, however, apply to household members acting as final consumers. Here tastes, or consumer preferences, drive behaviour rather than the requirements of cost minimisation. In standard economic theory, consumer choice is seen as a process in which agents do the best they can in light of their preferences over all possible bundles of goods, given market prices and their income. With the introduction of eCommerce the pattern of consumer preferences can be extended to cover the various means of transacting business. Otherwise identical goods can be distinguished on the basis of the means of acquiring them. For example, we can distinguish between buying a book in a face-to-face visit to a bricks and mortar bookstore and buying the same book over the Internet. Clearly, the two are quite different experiences, where the purchasing experience is part of what the consumer buys. In this setting it is a simple matter to generate two general theoretical results. First, the introduction of a new transaction experience like eCommerce yields an unambiguous welfare improvement for consumers and society, as will any subsequent reduction in the transaction costs of conducting eCommerce. Second, with the introduction of the new means of doing business there will be an unambiguous fall in sales involving the pre-existing means of conducting business (controlling for other variables like population and income levels). However, after this first shock, the impact of further reductions in the costs of the new means of transacting are not as clear cut for the sales of both new and old products, as both income and pure price substitution effects are involved. This, in itself, is a very important result as, over time, with increasing incomes or reduced prices, it is perfectly possible for the sales by both means to rise.

The whole issue here turns on whether the product characterised by the pre-existing means of conducting business (say, face-to-face) is a normal or inferior good. A normal good is one for which consumption rises as income increases while controlling for all other influences on consumption. An inferior good is one for which consumption falls as income rises, again controlling for other influences on consumption. (In Australia, for example, in aggregate mutton is an inferior good while lamb is a normal good.)

The upshot of this distinction between normal and inferior goods is that so long as the product characterised by the pre-existing means of conducting business is not an inferior good it is quite possible for its sales to rise, along with those of the eCommerce product, as incomes rise or the cost of the latter falls. The effects of the introduction of the VCR on the movie industry provide an instructive illustration. At first the VCR was greeted with a great deal of concern about its implications for cinema ticket sales. In effect consumers now had a new means of purchasing and consuming the movie experience: renting a video and watching it home. This was a new means of acquiring the good and is quite different from the previously established modes: going to the cinema or going to the drive-in. Just as would be expected on the basis of the modelling outlined above, attendances at both cinemas and drive-ins both initially declined with introduction of the VCR. Over time, however, in the presence of both rising incomes and falling total cost for watching movies at home on a VCR, the sales of cinema tickets recovered to now exceed pre-VCR levels. Drive-in ticket sales, however, did not recover and continued to fall to the point where the drive-in has virtually disappeared. In the terminology introduced above, the cinema movie experience would seem, in aggregate, to be a normal good but the drive-in movie experience an

inferior good. Total expenditure on cinema tickets and movie rentals could, and did, both rise as incomes rose and the price of watching a video at home fell, while the same two phenomena combined to kill off the drive-in.

While household agents acting as final consumers are free of the competitive pressure firms face to adopt eCommerce, it is quite a different matter when household agents act as sellers of productive inputs, like labour services. Over time the pressure of competition between agents seeking to sell labour services will see those agents acquire the skills demanded by buyers of these services. As firms adopt eCommerce under the requirements of cost minimisation there will be increases in the demand for the staff required to support, and be proficient in, the new means of conducting business. The sellers of labour services can be expected to respond to this shift in demand, the result being a general increase in eCommerce skills. This, in turn, will have a derived demand effect in the education and training sector. This is a topic for further consideration in the next section.

For government the case may seem more like that of final consumers, where the tastes of decision makers may be a critical determinant of the extent to which the practices of eCommerce are applied. However, two factors would seem to work towards a rapid uptake of eCommerce by government agencies. First, demand by agency clients for the provision of eCommerce interfaces, for instance where firms are users of government information; and second, the pressure on governments to minimise costs in the provision of services to allow either the provision of additional services without increased taxes or offer the same services with lower taxes. Indeed, there is probably just as much scope for the use of eCommerce in the re-organisation of government agencies and their relationship with their constituencies as there is for the restructuring of firms and the markets within which they operate.

The significance of eCommerce for inter-action between agents via markets and their intra-actions within firms and other organisations means, as already observed, that eCommerce is better treated as a new means of doing business rather than a new, somehow separate, sector of economic activity. For the economy as a whole, the significant potential transaction and organisational cost savings implicit in eCommerce imply significant potential improvements in economic efficiency and an increase in the long-term growth in aggregate output. Savings on transaction costs will release resources that would otherwise have been absorbed in transacting or organisation alone. These resources will be available for the production of more and new goods and services. In the first instance, these costs savings will be associated with better managed inventories, cheaper sales execution, more effective procurement, and cheaper intangibles like banking and distribution. All this should allow an improved coordination of productive activity, leading to the better allocation of resources and significant productivity improvements. And it would seem that evidence of this is already appearing for the economies rapidly taking up eCommerce (Coppel, 2000).

Some Lessons for Higher Education

Four broad lessons for higher education can be drawn from the preceding review of the emerging economics of eCommerce. First, and most importantly, the future of campus education turns, in part, on whether it is a normal or inferior good. This distinction makes it possible to address questions like, what will happen to the demand for the shared, face-to-face, educational experience offered on thousands of different campuses across the globe in light of the alternatives provided by online instruction? What initial impact will the new delivery mode have and what will be the longer term effects as incomes rise and the costs of online delivery fall?

Economic choice theory modelling suggests that the introduction of a new delivery mode will be associated with a short-run decline in the demand for campus education. This decline might only be in the form of a reduced rate of growth as other variables affecting demand for campus education are also continuously changing like population levels and age composition, income levels and the returns to higher education. As for the longer term, there are strong grounds to see campus

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education as a normal good, that is demand for campus education rises with income and might even rise as the cost of online education falls. Thus in the short term there might be relatively low, or negative, growth in the demand for campus education and rapid growth, from a very low base, for online delivery. In the medium to longer term this seems likely to reverse with relatively strong growth in the demand for campus education and relatively weak growth in online delivery.

The second lesson follows from the far-reaching potential of eCommerce as a new way of doing business that can reach into all aspects of our lives. This suggests a correspondingly far-reaching integration into education and training. Information technology literacy might become as important as numeracy in education at all levels. Indeed, the requirements of change alone, and eCommerce in particular, have far reaching implications for education, training and the labour market in general. Success in the new way of doing business means new skills, new outlooks and a new commitment to life-long learning. Preparation for success in the new way of doing business is much more than teaching students HTML, or even web competencies. None of us can know how we will be working in five or ten year's time. To take on the new challenges and seize the new opportunities it is more important than ever that members of the workforce have critical and analytical skills, the desire to learn and understand, and the ability to think from different points of view. (In fact, just the sort of things valued in higher education). This means that in our desire to prepare for a world in which the web and its technologies are as commonplace and ubiquitous as the telephone we must not forget the existing arts and sciences that provide the myriad other competencies required for a fast changing, vibrant modern economy. Little, if any, of what of universities have traditionally done is less relevant and there is good reason to think that most of it will be more relevant.

The third lesson from the economics of eCommerce is that publicly funded institutions of higher education have to expect increased pressure from governments to exploit the new information technologies to reduce costs or do more with the same resources. Governments are under constant pressure to provide more services from a given tax income or the same services from a smaller tax income. (Indeed, in Australia the Department of Education Training and Youth Affairs and the National Office of the Information Economy have launched a project to explore the opportunities for business-to-business eCommerce in higher education (NOIE, 2000)). Combined with this pressure from governments will be demand for information technology competencies from employers and from students with an eye on their employability. Institutions of higher education will have to thoroughly embrace the new way of doing business: it will be demanded of them by their funders and there will be a demand for it by education consumers, both students and the employers of graduates.

The fourth and final lesson derives from the fact that new products are a relatively unimportant part of the wide raft of implications of the development of eCommerce. There is simply not a 'new economy', in any profound sense, or even the birth of an 'information economy' or a 'knowledge economy'. Information and knowledge have always been fundamental to economic activity. There will be some new products and new organisational forms, with the changes perhaps being in the order of those associated with the arrival of the telephone or modern electricity generation and supply systems. The rise of eCommerce is not on a par with, say, the development of equality before the law or the invention of the limited liability joint stock company.

There will certainly be a place for online delivery of higher education and new partnerships with industry in research and life-long learning, but the fundamental place of universities is not at threat from the arrival of new information technologies. (Bad policy decisions in particular political jurisdictions are, of course, quite another matter). If anything, the increased role for information technology, innovation, economic globalisation, and the rapid rate of change all point to a more substantial place for, and more, university education and research, not less. To take that place universities will have to seize the nettle, embrace the technologies and the new ways of doing business. The campus educational experience must be enhanced and enriched by the new technologies and practices, not abandoned because of them. Moreover, this is not just a matter of meeting demand (giving students a campus education because they like it, which is a good thing in itself); it is a strategic matter: campus education can instil many of the traits required in an advanced, rapidly changing economy: communication skills, critical thinking, a willingness to

subject ideas to the data, the joy in learning, flexibility and the ability to work in a team. Indeed, success in developing these very skills is critical to success in capturing the potential of the new ways of doing business.

Conclusion

In summary then, the four lessons for higher education from the economics of eCommerce are:
remember that campus education is a normal good;
the arrival of eCommerce alone does not provide grounds for significant changes to university offerings;
new partnerships and delivery will emerge but not dominate; and
expect pressure from a range of sources to enhance campus education in light of the new practices.

New virtual universities, or virtual incarnations of established institutions, will not sweep aside their rivals and dominate higher education across the globe. (If information technology alone could make this sort of difference, then surely the VCR and TV would have already done so). Location and the campus educational experience matter and will continue to matter. Indeed, perhaps the most important educational opportunity provided by the new information technologies is in enhancing the on-campus experience by allowing more resources to be committed to those elements of the campus experience that matter most to students.

The normal good characteristics of on-campus education and falling transaction and organisational costs lend a certain logic to the likely evolution of higher education. None of this is, however, immune from bad policy decisions. For instance, flying in the face of the normal-good nature of campus eduction could be a national disaster, with too few acquiring the skills required for the full realisation of the potential inherent in the new information technologies. Governments can fail, just as markets do in certain circumstances. In light of the apparently dazzling array of new opportunities and the increasing economic importance of university education and research getting higher education policy right has become more important. As always, the only hope for getting it even approximately right is intense, critical and well informed debate.

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